Yale SCHOOL *of* MANAGEMENT

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Target Price:	$10.44
Current Price:	$13.99
Difference:	(25.4%)

Initiating Company Coverage:

Micron Technology Inc. (MU)

Recommendation: SELL

- MU is well positioned to capture future growth
- However, growth is expensive
- Over dependence on DRAM (87% of revenues)
- Strong competition
- Current lawsuits

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Investment Thesis.

MU is well positioned to capture future growth in the NAND and CMOS segments. With the ability to reassign manufacturing capacity quickly and cheaply to different products, MU is able to choose its product mix in an optimal way.

However, growth is expensive, keeping in mind the investment needs to sustain the high growth levels. It seems MU will struggle to generate enough cash to keep up with the Capex needs. With equipment costs ever increasing and their useful life of only 3 to 5 years, growth is costly

Over dependence on DRAM (87% of revenues) exposes MU to the volatile demand for these products. Overcapacity in the market could quickly drive prices down and other hits on the PC sales (e.g. Intel not being able to produce enough processors) could hurt MU significantly.

Strong competition will keep prices down. Even though MU is one of the market leaders in the memory semiconductors segment, it faces competitors with deep pockets and not less-proven manufacturing track record like Toshiba and Samsung.

Current lawsuits could not only distract management but could also incur costs. Even though the company was awarded last year $12 million in anti-dumping tariffs last year, it also faces serious anti-trust allegations of price-fixing and patent conflicts seem to be frequent in this sector.

Company Description

Reuters provides the following description of MU's business[1]:

> *Micron Technology, Inc., together with its subsidiaries, is engaged in the manufacture and marketing of dynamic random access memory (DRAM), NAND Flash memory, complementary metal-oxide semiconductor (CMOS) image sensors and other semiconductor components. The Company's products are offered in a variety of package and configuration options, architectures and performance characteristics tailored to meet application and customer needs.*
>
> *Micron Technology, Inc.'s products are used in an array of electronic applications, including personal computers, workstations, network servers, mobile phones, flash memory cards, universal serial bus (USB) storage devices, digital still cameras, Moving Picture Experts Group layer-3 audio (MP3) players and other consumer electronics products. The Company's customers include original equipment manufacturers located around the world. Its products are offered under the Micron, SpecTek and Crucial brand names, and under other private labels.*
>
> *For the fiscal Year ended 1 September 2005, Micron Technology, Inc.'s revenues rose 11% to $4.88B. Net income rose 20% to $188M. Revenues reflect higher sales of DRAM, CMOS image sensors, and NAND Flash memory products. Net income also reflects a decrease in R&D expenses, a $13M gain on the sale of semiconductor equipment, $12M in receipts from the U.S. Government in connection with anti-dumping tariffs, and the absence of currency losses.*

Micron Technology (MU) is a manufacturing firm. While companies like Intel and AMD compete on the basis of break-through innovation, MU competes on the basis of better manufacturing processes and incremental improvements in products.

The product lines that MU manufactures are fairly similar in the way they are produced and the raw materials required. This allows MU to use similar machinery for all of its product lines manufacturing with little customization and very short lead times. This gives the company invaluable ability to respond to changing demands very quickly and with relatively low cost for doing so.

MU also does not require as large R&D resources as design firms might do. MU's R&D effort is mainly focused on the improvement of its manufacturing processes (e.g. less defects, faster, etc) or incremental (rather than disruptive) improvements to its existing products (e.g. higher data throughput, higher density, etc.).

Micron sells mainly to original equipment manufacturers. As such, it is exposed to certain buyer bargaining powers. Furthermore, MU's sales are almost directly driven by demand for the end product made by the OEMs, since they avoid stocking up inventory.

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[1] OneSource company profile (http://businessbrowser.onesource.com/web/Reports/cia.aspx?KeyID=L19172&Process=CP)

MU's stock price performance is given in the chart below.

Product Mix

DRAM: Dynamic Ramdon Access Memory (DRAM) provides high-speed data storage and retrieval. This segment represented 87% of Micron's total revenues in 2005 and has been decreasing as a proportion of total revenues over the last 3 years.[2] Historically, Micron's DRAM segment has been highly concentrated in computer memory products. In recent quarters, with greater innovation and development, DRAM has evolved in synchronous DRAM (SDRAM), Double Data Rate DRAM (DDR), DDR2 and Mobile DRAM. All these new products (except Mobile SDRAM) can be used as memory products in computers and servers and lately there has been a shift from SDRAMs to DDRs and DDR2. The sales of SDRAM has declined even though it is increasingly used in many other applications. Mobile DRAM has grown from zero to 2% of the sales in 2005 and is used in PDAs, GPS devices, smart phones, digital still camera and other electronic products.[3]

Micron expect DDR2 (currently only 14% of total sales) to become a primary DRAM product. Similarly, growth in Mobile DRAMs is also expected to be high because of demand of mobile phones, PDA's and other handhelds. Together DDR2 and Mobile DRAM would more than offset any potential loss in SDRAM segment.

Overall DRAM market is expected to decline by 4.8% in 2006.[4]

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[2] Micron Technologies Annual Report 2005
[3] Micron Technologies Annual Report 2005
[4] Gartner Report, July 7, 2005

NAND Flash Memory: Flash memory products are electrically re-writeable, non-volatile semiconductor devices that retain memory content when power is turned off. The market for NAND has grown dramatically because of the demand for removable storage devices, MP3 players, flash memory devices, digital still cameras, etc. Micron forayed in NAND products in second quarter this year and the sales of NAND has grown to 6% of the total sales.[5] Micron is allocating additional manufacturing capacity for NAND.

Revenues from memory products worldwide are forecasted to reach $63.5 billion by 2008, representing a five-year compound annual growth rate (CAGR) of 14 percent.[6]

CMOS Image Sensors: CMOS image sensors are semiconductor devices that capture and process images into pictures or video for a variety of consumer and industrial applications. Micron's CMOS sales grew by 200% from 2004 to 2005 and represented 9% of the net sales in the fourth quarter of 2005.

CMOS global sales are expected to grow cumulatively at 33% for the next few years with total revenues likely to reach $4.64 Billion by 2007.[7]

Growth Opportunities:

Growth in the PC and server market**:** Growth in worldwide computer unit sales is expected to be 7.5% in 2006.[8] Worldwide Internet penetration is only 15.2%,[9] which represents a huge upside potential for companies like Micron, AMD, Intel, in the years to come. The number of internet users and computer penetration has grown by 169.5% cumulatively since 2000-2005.

Growth in electronic goods and communication devices sales: Currently, 13% of MU's revenues come from NAND and CMOS, up from practically nothing 2 years ago. As mentioned earlier, there is huge growth potential in CMOS and NAND sales due to the high growth of consumer electronics goods sales, which are the primary users of these products. As discussed in our industry report, growth in this sector will be around 16.1% (CAGR) through 2009, with digital TV and networking equipment leading the sector.[10]

Micron is well positioned to benefit from this growth because of its established manufacturing capabilities and ease of shifting manufacturing resources between products. Micron is constantly revisiting its product mix for optimum allocation of manufacturing capacity to higher-margin products. Recently, Intel and Micron entered into a joint venture to manufacture flash memory products, highlighting the increased significance of this segment. This joint venture already has exclusive sales contracts from Apple.

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[5] Micron Technologies Annual Report 2005
[6] EE Times, 05/28/2004
[7] Frost & Sullivan
[8] Gartner Research, July 7, 2005.
[9] Internet World Stats, http://www.internetworldstats.com/stats.htm
[10] "Industry Surveys: Semiconductors" Standard & Poors, September 1, 2005.

Opportunities for more joint ventures: Micron's strength lies in manufacturing and there are capacity constraints for many big design and manufacturing companies such as Intel, AMD, TI etc. We see Micron benefiting from more potential joint ventures with firms who rely on design and innovation and look for partners with strength in manufacturing.

We also see Micron as a potential acquisition target by some of the larger design firms who might want to benefit from MU's manufacturing expertise and diversify their product mix as PC sales growth becomes smaller relative to consumer electronics sales. While we do not suggest that MU is an attractive target at this very moment, we note that this could be a potential upside for its investors.

Risk Factors:

Oversupply or less demand of DRAM: A major part of Micron's revenues comes from DRAM sales and oversupply or less demand for the product would put more pressure on market prices. Last year, the number of megabits sold by Micron went up by 40%, but prices fell by 24%. Micron's over-dependence on DRAM in the near future is a potential risk in depressed economic conditions. As mentioned earlier, DRAM revenue for the industry is expected to decline by 4.8% in 2006 and Micron faces the risk of further decline in prices or units sold in the years to follow.

Risk from intellectual property rights lawsuits: Intellectual property rights are one of the most important assets in semiconductor business and lawsuits related to infringement of design and manufacturing processes are common. Micron's inability to protect its manufacturing secrets, designs and IPRs, could be critical to the company. Micron is engaged in two major lawsuits, in one of which Micron has been accused of infringement and in the other, Micron has sued the other party for copying the designs. Micron could incur huge losses from these lawsuits and faces the risk of future lawsuits related to IPR.

Inability to produce new products: Micron is in the process of innovating products complementary to the memory products it already manufactures. In the past, Micron has been very successful in altering its DRAM products with R&D to better respond to changing demand. Inability to continue to innovate products to supplement the loss in DRAM or shift in DRAM products is one of the major risks Micron faces.

Overdependence on HP & Dell and shorter supply contracts: Micron's customers in DRAM segment are highly concentrated, with combined sales from HP and Dell representing 23%-28% of the revenues in the past few years. This over-dependence on a few customers is a potential risk going forward as Micron faces serious competition from companies in Taiwan and China. Short-term supply contracts are inherent in this industry, without significant penalty for rescheduling and canceling orders. As Micron is supplier of near-commodity memory products, it is more exposed to risk from short-term contracts than its other competitors like Toshiba and Samsung, which are big conglomerates.

The analysis presented above can be summarized with the following SWOT analysis:

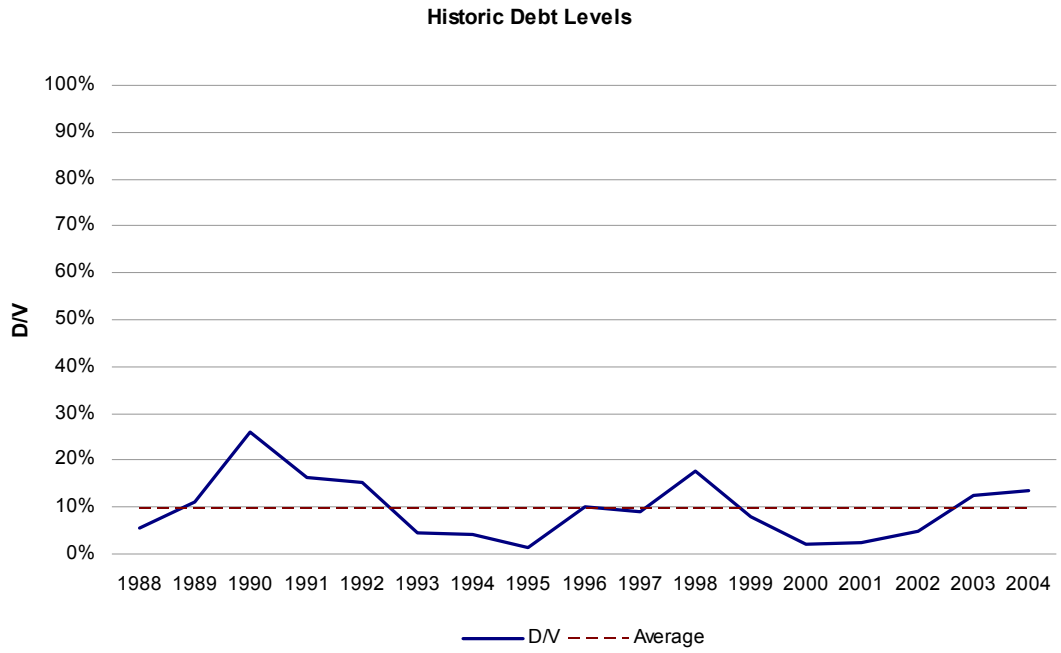
Strengths	**Weaknesses**
3rd Largest in DRAM business	Concentration of customers in DRAM business
Huge manufacturing capabilities	Undiversified product mix
Ability to switch manufacturing to suit product mix	IPR Lawsuits
Opportunities	**Threats**
Growth in PC, Servers & Electronic Components	Oversupply of DRAM driving the prices down
Growth in NAND and CMOS market	Potential IPR lawsuits
Potential joint ventures with Design Firms	Inability to innovate products

Valuation

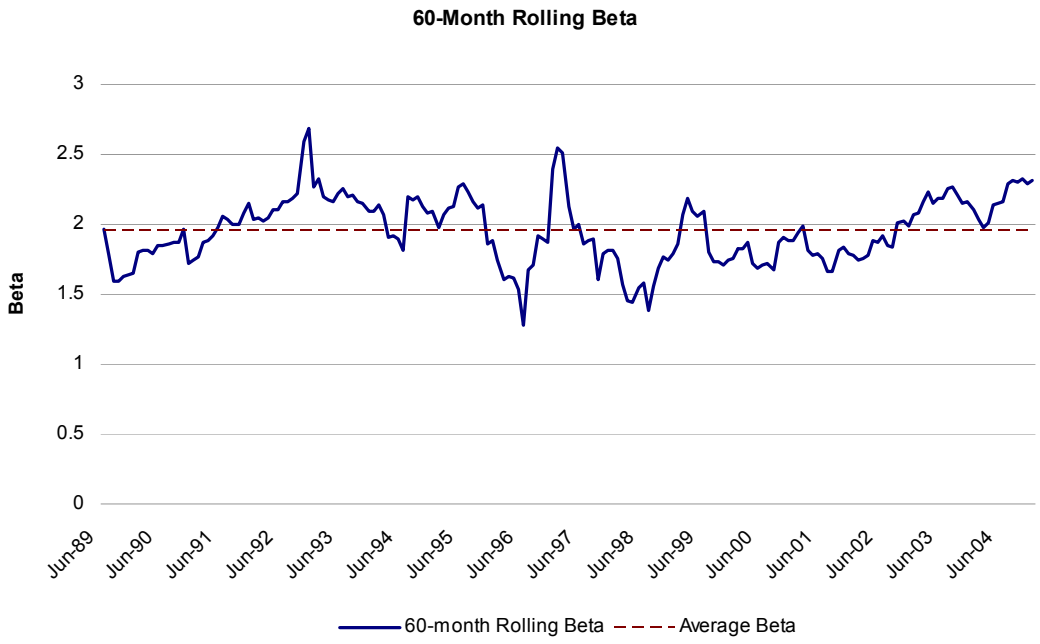
We based our valuation on a discounted cash flow analysis. As our industry report issued earlier this fall suggests, the semiconductor industry is evolving and is not expected to reach a steady state in the near future. As a participant in this industry, Micron will grow and evolve significantly for a long time before reaching steady state as well. Thus, we believe that a long-term horizon needs to be used in any valuation model of MU.

For our valuation, we used a 20-year horizon with detailed forecasts for the next 1 to 3 years. For the years after that, we used average industry and company growth trends and gradually decreased them to GDP growth levels and levels observed in more mature and stable industries.

Capital Structure: MU's capital structure seems to be relatively steady with historic debt levels around 10% (see picture below). Even though the level changes, there are no trends going in either direction, and debt is certainly not kept as a constant dollar amount. Thus, we assumed a capital structure with 10% debt going forward for the valuation, which allowed us to use a weighted-average cost of capital (WACC) approach to value the firm and its equity.



Beta: To estimate MU's beta, we calculated 60-month rolling beta values over the past 17 years. As it can be seen in the chart below, the beta has been persistently high. Four our valuation, we used the average level of 1.95, which is not too different from beta levels in recent years.



WACC: Having a beta estimate and assumed constant capital structure, calculating the WACC was a straightforward application of the CAPM and WACC formulae. Results are presented in the chart below.

Rf (5-year)	4.43%	**2006 FCF (million)**	12
Average Beta	1.95	**2025 FCF (million)**	7,465
Market Risk Premium	4.50%		
		Terminal Growth rate	3%
Re	13.2%	**PV of the FCF till terminal Value**	128
		PV of the FCF after Terminal year	7,842
Credit Spread (B+)	3.50%		
Effective Tax Rate	34%	**Total PV of FCF to D+E**	7,971
		Net Debt Today	643
Rd	7.93%	**PV of FCF to Equity**	7,328
E/V	90%	**Number of Shares o/s (million)**	702
D/V	10%	**Implied Price Per Share**	**$10.44**
WACC	12.4%	**Price Per Share (Dec-06-05)**	**$13.99**

We used 5-year treasury bonds to estimate the risk free rate of 4.43%. Market risk premium was assumed to be 4.5% aligned with all our valuation analysis to date. This results in a cost of equity of 13.2%.

MU has a B+ rating which demands a credit spread for the cost of debt of around 350 basis points over the risk free rate (according to research presented in our industry report). Our forecast shows that MU should be earning positive net income year on year in the future, which means that it can fully benefit from debt tax shields. We used an effective tax rate of 34%. This brings our WACC rate to 12.4%.

Using these estimations, we calculate an expected fair price per share for MU of $10.44. Since the company trades at $13.99, we recommend a *sell*. We show our complete model in *Appendix A* below.

Assumptions

Sales: For the first 3 years in our horizon, we have forecasted sales for each individual product line separately. As discussed above, MU's manufacturing processes and the similarity in the products allows the company to shift the product mix relatively easily in order to capture the markets that are growing fastest or offer highest margins. Thus, it is relatively easy for different products to change their growth rates quite dramatically relative to other products in MU's sales mix and forecasting each line separately will give better forecast of total sales.

DRAM sales are forecasted to decline about 5% globally next year and we believe this will affect Micron as well. While the company is shifting manufacturing capacity to other product lines, DRAM is 87% of the company's current revenues and MU will not be able to avoid a decline. Since DRAM is mostly used in computers, we assume growth for this product's sales for the remaining 2 years will revert to the average PC growth rate forecasted in our industry report of 9% per year. We believe that this is a reasonable assumption because the decline in DRAM sales is not due to lower demand, but decreasing unit prices. As the industry improves product performance, prices will tend to go up, improving margins and sales.

NAND is forecasted to grow significantly over the next two years. MU began shipping NAND memory only in the middle of last year and the product is already 6% of its overall sales volume. We believe that a 400% increase is not unrealistic, keeping in mind how easy it is for MU to shift manufacturing capacity to this product and how small relative to global demand MU's production is. A 400% increase for the whole year will bring NAND's share of sales from 6% to 8%, which we see as very reasonable. We keep NAND growth relatively high for the following two years as well, reflecting the explosive consumption of NAND flash memory in iPod's and other memory-heavy consumer electronics products. Overall industry growth of NAND sales over the next 4 to 5 years is forecasted to be 14% per annum. Thus, our forecasted growth rates relative to MU's small share of the market are realistic.

CMOS sales are growing significantly as well, keeping in mind that they grew 200% last year. Since proliferation of digital cameras, cell-phone cameras, security and other imaging devices is going to be strong in the future, we believe MU will grow this segment as well. Overall, industry sales are forecasted to grow at a rate of 33% in the near future, so we level off our forecasted growth at 33% in year 3 as well.

These forecasts bring our total sales to grow at 18%, 42% and 21% over the next 3 years. We see this forecast as realistic keeping in mind historic sales growth patterns and are confident in it.

Since the product life cycles in the semiconductor industry are 3 to 5 years, it is hard to forecast individual product line sales with enough accuracy for the period after the initial 1 to 3 years. This is because new products and technologies might come abruptly and improvements in existing products and technologies could shift product mix quickly and significantly. Thus, we forecasted sales growth past year 3 on the aggregate level and using average forecasted industry growth rates.

After the high growth expected in the next 3 years, we level the growth rates to an industry average of 13%. This rate is based on the 9% long-term PC growth rate and 16% long-term consumer electronics growth rate, to reflect MU's forecasted significant portion of revenues coming from memory products used in consumer electronics. The past 7 years in our 20-year horizon represent the maturing of the industry, with growth rates steadily falling to an average GDP growth rate of 3%.

COGS: MU will strategically determine its product mix not only to capture segments with high growth, but also segments with high margin. However, the company does not disclose costs on individual product lines, and analysis by product line was impossible. Thus, we assumed an average COGS rate across all product lines. We believe that this assumption is not going to result in major weakness in the forecast because these products are manufactured in similar ways with similar processes, machinery and inputs.

We used a level of 70% of sales for COGS for several reasons. First, this is the lower bound on the past 3 years of data (data for previous years was unreliable and we could not observe a long-term average for the costs) and considering that MU will shift its mix to higher-margin products to achieve optimal earnings, it is reasonable to assume that they might be able to keep COGS at low levels (relative to sales). Second, this is in line with industry metrics. Finally, we decided to stay on the conservative side and give MU the benefit of the doubt, since we recommend a sell, and higher COGS levels will only strengthen our recommendation. This is also the reason why we did not increase COGS relative to sales in the long term, even though we believe as the industry matures and competition increases, margins might decrease.

SG&A: Similar to COGS, we have adopted a conservative estimate for SG&A – at the lower bound of historic levels. We do not see any strong trends for this item in the long run, so we have kept it constant: we think it has a potential to decrease as products become more commodities-like in the future and MU will need less selling resources; but it could also increase due to competitive pressures requiring more sales resources, or simply increasing as a percentage of sales as sales are driven down by competitors.

R&D: Since MU is a manufacturing company, it uses its R&D mainly to improve products and find better ways to shift manufacturing capacity from one product to another (and not to completely develop brand new technologies like Intel for example). For example, any costs involved with the testing and a preparation of a product line before it is launched for a mass production are recorded as R&D. After that, they are switched to COGS. Thus, we expect R&D costs to be relatively high over the next 3 to 5

years, when the company has a high growth, launching new products, improving existing ones, and rebalances its product mix. We have reflected this expectation by higher R&D growth relative to the very recent past few years, and lower R&D costs for the longer-term future, when sales become more averagely growing. For the long-term, we grow R&D in line with sales, again reflecting the fact that R&D is needed for improvement or shift in products. It is important to note that such forecast of R&D leads to an R&D expense that is on the lower-end of the historic R&D levels as a percentage of sales. This is again being on the conservative side of our sell argument.

Interest Expense: Aligned with a constant capital structure, interest expense will stay constant at the historical low levels of 1% of sales for the entire horizon.

Capex: There are several trends that we have attempted to capture in the Capex forecasts. First, we note that the average project life cycle in the semi-conductor industry is about 3 to 5 years. Thus, every 4 years, we assume MU will have a slightly higher than average Capex to allow for a more significant change/upgrade in its equipment (MU states in its disclosure documents that they expect manufacturing equipment to have a life of about 3 to 5 years as well).

We have also recognized that the capital expenditures on average will be higher in the early years when the industry is rapidly evolving. As the industry starts to mature, we expect Capex as a percentage of sales to start decreasing. To estimate what levels might be reasonable for a matured semiconductor industry, we tried to pick similar manufacturing industries that might have been innovation-driven industries at the beginning and were at the maturing stage later on.

We believe the consumer electronics industry in the 1960s to 1980s would have been a good comparable industry matching these criteria. This industry was innovation driven before that period and the entered a more mature stage during the chosen period, just like what we are looking for the semiconductors industry in 20 years time.

Of the US electronics companies that existed at that period, we found three that were publicly traded and had costs information easily available in their filings. These were Marantz, Tektronix and Texas Instruments. We took a sample period from 1967 to 1987 (the time that all three companies existed at the same time) and calculated average Capex as percentage of sales. We discovered the average to be 6.1% and assumed that MU's Capex in steady state would be around that level too.

Working Capital: Similar to the Capex reasoning, we attempted to forecast working capital close to recent historic levels for the high-growth years, and taper it off to some reasonable mature levels in the later years. We observed the benchmark companies discussed in the Capex section, and noticed that the average working capital as a percentage of sales was 29.2% for the period discussed in the Capex section.

In our model, we used recent average historic WC levels for the first 5 years – the years of high growth. As sales reached steady levels of average industry growth, we decreased

WC slightly, and eventually tapered it off at a mature 29% of sales in the last 7 years of our horizon – the "maturing" period.

Depreciation and Amortization: Micron depreciates its PP&E on a straight-line basis over useful lives of 2 to 30 years for its various assets. We studied past capital expenditure and depreciation numbers and discovered that an average life of 6 years across all assets best fits the data. Thus, we used average Capex over preceding 6 years to estimate MU's depreciation and amortization expense for each year going forward.

As discussed in the analysis above, we believe our forecasts are fairly accurate. However, in an industry with such uncertainties, there will inevitably be cases where estimation will be hard. In such cases, we have tried to give MU the benefit of the doubt, given our recommendation of *sell*. Even with these forecasts, their price comes to $10.44, while it is currently trading at $13.99.

While this might not seem too big of a difference, we need to point out that we have not included in our modeling any potential losses due to the 2 main law suits they are currently facing, nor have we included any potential options overhang arising from granted employee stock options. These two concerns have only down potential for MU, while we believe we have already priced all upside potentials in the $10.44 price.

Sensitivity Analysis

As observed in our industry analysis as well, the forecasts are very sensitive to discount rates (hence, beta, risk premium, etc) and growth rates. This is to a large extent due to the high growth forecasted for a very long period of time. Unfortunately, there is no way to mitigate this very much except trying to make the forecasts as reliable as possible. One should use these sensitivities tables to change one's stock outlook accordingly if one disagrees with the assumptions in the model.

We also point out that performing sensitivity on the sales growth rate is very hard since we do not use a uniform growth percentage throughout the horizon of the model. Even worse, other assumptions throughout the model (i.e. margins, investment levels, etc.) are based on the assumption that sales growth will not be uniform throughout the 20 years of the valuation horizon. However, the hypothetical sensitivity table (which assumes a uniform sales growth) does give an indication how sensitive the value is to the growth assumptions.

The sensitivity tables below show values that are 10% or more above our valuation in green color and values that are 10% or more below our valuation in red color.

Risk Premium	Beta 1.4	1.6	1.8	2	2.2	2.4	2.6
3.5%	35.48	28.32	22.72	18.28	14.72	11.82	9.46
3.8%	30.97	24.34	19.21	15.18	11.97	9.40	7.31
4.2%	25.92	19.94	15.37	11.82	9.04	6.82	5.05
4.5%	22.72	17.19	12.99	9.77	7.26	5.28	3.71
5.5%	14.72	10.42	7.26	4.90	3.12	1.77	0.73
6.5%	9.46	6.10	3.71	1.99	0.73	-0.21	-0.90
7.5%	5.89	3.27	1.46	0.19	-0.70	-1.34	-1.79

D/V ratio	Risk-free Rate 3.50%	3.80%	4.10%	4.40%	4.70%	5.00%	5.30%
1%	16.49	15.02	13.67	12.44	11.31	10.27	9.32
3%	15.98	14.53	13.20	11.99	10.88	9.87	8.93
5%	15.48	14.05	12.75	11.56	10.47	9.48	8.56
10%	14.29	12.92	11.68	10.55	9.51	8.56	7.69
15%	13.19	11.88	10.69	9.61	8.62	7.72	6.90
25%	11.22	10.02	8.94	7.95	7.05	6.23	5.49
35%	9.52	8.42	7.43	6.53	5.71	4.97	4.30

D/V ratio	Credit Spread 2.60%	2.90%	3.20%	3.50%	3.80%	4.10%	4.40%
1%	12.35	12.34	12.33	12.32	12.31	12.30	12.29
3%	11.95	11.93	11.90	11.88	11.85	11.83	11.80
5%	11.57	11.53	11.49	11.45	11.41	11.37	11.33
10%	10.66	10.59	10.51	10.44	10.37	10.29	10.22
15%	9.82	9.71	9.61	9.51	9.41	9.31	9.21
25%	8.30	8.15	8.00	7.85	7.71	7.57	7.43
35%	6.98	6.79	6.62	6.44	6.27	6.10	5.94

Discount Rate	Growth Rate 7%	9%	11%	13%	15%	17%	19%
11.5%	-1.04	-0.38	0.71	2.43	5.02	8.82	14.26
11.8%	-1.16	-0.60	0.37	1.90	4.22	7.64	12.56
12.1%	-1.28	-0.79	0.06	1.42	3.50	6.58	11.02
12.4%	-1.37	-0.96	-0.22	0.99	2.85	5.62	9.64
12.7%	-1.46	-1.11	-0.46	0.61	2.27	4.76	8.39
13.0%	-1.54	-1.24	-0.68	0.26	1.75	3.99	7.26
13.3%	-1.60	-1.36	-0.88	-0.05	1.27	3.29	6.25

Appendix A: DCF Valuation Model

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DRAM	2,968	4,052	4,246	4,042	4,244	4,626																	
% of sales	*96%*	*92%*	*87%*	*70%*	*52%*	*47%*																	
growth		*37%*	*5%*	*-5%*	*5%*	*9%*																	
NAND	0	0	97	483	1,448	1,926																	
% of sales	*0%*	*0%*	*6% in Q4*	*8%*	*18%*	*20%*																	
growth				*400%*	*200%*	*33%*	*14%*	*14%*															
CMOS	N/A	139	416	1,248	2,497	3,321																	
% of sales	*N/A*	*3%*	*9%*	*22%*	*30%*	*34%*																	
growth			*200%*	*200%*	*100%*	*33%*																	
Sales	3,091	4,404	4,880	5,773	8,189	9,873	11,848	13,625	15,396	17,398	19,660	22,215	25,103	28,367	32,054	36,221	40,206	43,824	46,892	49,705	52,191	54,278	55,907
growth	*19%*	*42%*	*11%*	*18%*	*42%*	*21%*	*20%*	*15%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*11%*	*9%*	*7%*	*6%*	*5%*	*4%*	*3%*
COGS	3,112	3,090	3,734	4,041	5,733	6,911	8,293	9,538	10,777	12,178	13,762	15,551	17,572	19,857	22,438	25,355	28,144	30,677	32,824	34,794	36,534	37,995	39,135
% of sales	*101%*	*70%*	*77%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*
Gross Margin	-21	1,315	1,146	1,732	2,457	2,962	3,554	4,088	4,619	5,219	5,898	6,665	7,531	8,510	9,616	10,866	12,062	13,147	14,068	14,912	15,657	16,284	16,772
% of sales	*-1%*	*30%*	*23%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*
SG&A	358	332	348	404	573	691	829	954	1,078	1,218	1,376	1,555	1,757	1,986	2,244	2,535	2,814	3,068	3,282	3,479	3,653	3,799	3,913
% of sales	*12%*	*8%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*
R&D	656	755	604	737	899	1,096	1,315	1,526	1,724	1,948	2,202	2,488	2,811	3,177	3,590	4,057	4,503	4,908	5,252	5,567	5,845	6,079	6,261
% of sales	*21%*	*17%*	*12%*	*13%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*
growth	*17%*	*15%*	*-20%*	*22%*	*22%*	*22%*	*20%*	*16%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*11%*	*9%*	*7%*	*6%*	*5%*	*4%*	*3%*
Non-Recurring	109	-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of sales	*4%*	*-1%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Operating Income	-1,187	250	218	591	985	1,175	1,410	1,608	1,817	2,053	2,320	2,621	2,962	3,347	3,783	4,274	4,744	5,171	5,533	5,865	6,159	6,405	6,597
% of sales	*-38%*	*6%*	*4%*	*10%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*	*12%*
Interest Expense	37	36	47	58	82	99	118	136	154	174	197	222	251	284	321	362	402	438	469	497	522	543	559
% of sales	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Income Before Taxes	-1,200	232	199	534	903	1,076	1,291	1,472	1,663	1,879	2,123	2,399	2,711	3,064	3,462	3,912	4,342	4,733	5,065	5,368	5,637	5,862	6,038
% of sales	*-39%*	*5%*	*4%*	*9%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*
Income Taxes	73	75	11	181	307	366	439	500	565	639	722	816	922	1,042	1,177	1,330	1,476	1,609	1,722	1,825	1,917	1,993	2,053
%		*32%*	*5%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*	*34%*
Net Income	-1,273	157	188	352	596	710	852	971	1,097	1,240	1,401	1,584	1,789	2,022	2,285	2,582	2,866	3,124	3,343	3,543	3,720	3,869	3,985
% of sales	*-41%*	*4%*	*4%*	*6%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*
CAPEX	822	1,081	1,065	1,270	2,211	2,172	2,607	2,998	4,003	3,480	3,932	4,443	6,527	5,673	6,411	7,244	9,649	8,765	8,441	7,456	8,872	6,513	5,591
% of sales	*27%*	*25%*	*22%*	*22%*	*27%*	*22%*	*22%*	*22%*	*26%*	*20%*	*20%*	*20%*	*26%*	*20%*	*20%*	*20%*	*24%*	*20%*	*18%*	*15%*	*17%*	*12%*	*10%*
WC	1,044	1,667	1,947	2,136	3,030	3,653	4,384	5,041	5,389	6,089	6,881	7,775	8,786	9,928	11,219	12,677	12,866	12,709	12,192	11,432	10,438	9,227	7,827
% of sales	*34%*	*38%*	*40%*	*37%*	*37%*	*37%*	*37%*	*37%*	*35%*	*35%*	*35%*	*35%*	*35%*	*35%*	*35%*	*35%*	*32%*	*29%*	*26%*	*23%*	*20%*	*17%*	*14%*
D&A	1,209	1,217	1,265	1,081	1,201	1,437	1,734	2,054	2,543	2,912	3,198	3,577	4,230	4,676	5,078	5,705	6,658	7,378	7,697	7,994	8,405	8,283	7,606
% of sales	*39%*	*28%*	*26%*	*19%*	*15%*	*15%*	*15%*	*15%*	*17%*	*17%*	*16%*	*16%*	*17%*	*16%*	*16%*	*16%*	*17%*	*17%*	*16%*	*16%*	*16%*	*15%*	*14%*
FCF Calculation																							
EBIT	-1,187	250	218	591	985	1,175	1,410	1,608	1,817	2,053	2,320	2,621	2,962	3,347	3,783	4,274	4,744	5,171	5,533	5,865	6,159	6,405	6,597
Taxes (@34%)	-403	85	74	201	335	399	479	547	618	698	789	891	1,007	1,138	1,286	1,453	1,613	1,758	1,881	1,994	2,094	2,178	2,243
NOPAT	-783	165	144	390	650	775	930	1,061	1,199	1,355	1,531	1,730	1,955	2,209	2,496	2,821	3,131	3,413	3,652	3,871	4,065	4,227	4,354
Add D&A	1,209	1,217	1,265	1,081	1,201	1,437	1,734	2,054	2,543	2,912	3,198	3,577	4,230	4,676	5,078	5,705	6,658	7,378	7,697	7,994	8,405	8,283	7,606
Less CAPEX	-822	-1,081	-1,065	-1,270	-2,211	-2,172	-2,607	-2,998	-4,003	-3,480	-3,932	-4,443	-6,527	-5,673	-6,411	-7,244	-9,649	-8,765	-8,441	-7,456	-8,872	-6,513	-5,591
Less Change in WC	322	-623	-280	-189	-894	-623	-731	-658	-347	-701	-792	-895	-1,011	-1,142	-1,291	-1,458	-188	157	517	760	994	1,211	1,400
FCF to D+E	-74	-322	63	12	-1,254	-583	-673	-540	-608	87	6	-30	-1,352	70	-127	-177	-48	2,183	3,426	5,169	4,591	7,208	7,770
PV(CF)	-74	-322	63	11	-992	-410	-421	-301	-301	38	2	-11	-419	19	-31	-39	-9	377	526	706	558	779	747
Terminal Value				84,923																			
PV(Terminal Value)				8,163																			
PV(FCF)				8,991																			
Add Cash				525																			
Less Debt				-1,167																			
MV of E				8,349																			
# of Shares				702	million																		
Price per share				**11.89**																			

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